UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,952	08/22/2003	Xiao-Fan Feng	KLR7146.0199	8258

52894 7590 04/30/2007

KRIEGER INTELLECTUAL PROPERTY, INC.
P.O. BOX 1073
CAMAS, WA 98607

EXAMINER	
KAU, STEVEN Y	

ART UNIT	PAPER NUMBER
2625	

MAIL DATE	DELIVERY MODE
04/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/645,952	FENG ET AL.	
	Examiner	Art Unit	
	Steven Kau	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/2/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 5-13 and 22 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4-13 and 19 of copending Application N0. 10/676,891 in view of Martens et al (Martens) (US 5,983,251).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the invention scope of the claims is identical to the claims of the copending Application N0. 10/676,891.

Claims 1, 5-13 and 22 are drawn to a method for creating a dither pattern, and "a set of instructions", respectively. The Claims 1, 5-13 are drawn to a method for designating pixel values in a plurality of dither pattern tiles, each of said tiles being

allocated to an image description channel, wherein said designating is performed using cross-channel feedback, such that subsequently-designated pixel values are placed at a location that is related to the location of previously-designated pixel values in the same image description channel and related to the location of previously-designated pixel values in other image description channels; and Claim 22 is drawn to "a set of instructions" for creating a spatio-temporal array of dither patterns.

Claims 1, 4-13 and 19 of the copending Application N0. 10/676,891disclose the same limitation as claims 1, 5-13 and 22 of the copending application.

Re. claim 1 in the current application vs claim 1 in the copending application: The preambles are similar, step (b) of claim 1 "orienting" is similar to what the steps in claim 1 of the copending application recited. The scope of claim 1 in the copending application teaches all the limitations (see comparison table, steps A and C) of the claimed invention's A, B and C. The copending application's claim teaches additionally steps A and C. The invention of copending application is broader than the current application claim limitations, and does not teach what the copending application teaches such as "an initial reference frameset (IRF), wherein said IRF comprises an initial pixel pattern".

Martens discloses a method and apparatus for data analysis, in that he teaches a reference frame comprising pixel values (col 8, lines 58-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the copending Application to include a frame comprising

pixel values taught by Martens for empirical flexibility and capable of dynamic updating on short and long range systematic redundancies in various domain (col 3, lines 34-45).

Re. claims 5-13 and 22 of the current invention, with respect to the claims 4-13 and 19 in the copending application, respectively, are rejected with the same rational as in the rejection in of claim 1, because the copending application's claim contained a detailed enabling methodology, a suggestion to modify the copending application to produce the claimed invention, in order to improve a dither pattern for a multiple image description channel image.

#	Current Application	#	Copending Application
Claim 1		Claim 1	
A	A method for creating a dither pattern, said method comprising:	A	A method for creating a dither pattern array, said method comprising:
B	a. establishing an initial reference frameset (IRF), wherein said IRF comprises an initial pixel pattern;	B	N/A
C	b. creating a dither pattern by orienting pixel values in said pattern by a method wherein	C	a. assigning a value to pixels in the pattern such that subsequent pixel values are placed at a

	pixel values are placed in a position that is dispersed from position of pixel values in said initial pixel pattern and the position of pixel values in said dither pattern.		location that is dispersed from previously-placed pixel values that are located in other color channels and other temporal frames.
Claim 5		Claim 4	
A	A method for creating a dither pattern for a multiple image description channel image, said method comprising:	A	A method for creating a dither pattern for a multiple image description channel image, said method comprising:
B	designating pixel values in a plurality of dither pattern tiles, each of said tiles being allocated to an image description channel, wherein said designating is performed using cross-channel feedback, such that subsequently-designated pixel values are placed at a location	B	assigning a value to pixels in a plurality of dither pattern tiles, each of said tiles being allocated to an image description channel, wherein said assigning is performed using cross-channel influence, such that subsequently-assigned pixel values are placed at a location

	that is related to the location of previously-designated pixel values in the same image description channel and related to the location of previously-designated pixel values in other image description channels.		that is related to the location of previously-assigned pixel values in the same image description channel and related to the location of previously-assigned pixel values in other image description channels.
Claim 22		Claim 19	
A	A set of executable instructions for creating a spatio-temporal array of dither patterns, said method comprising:	A	A set Of executable instructions for creating a spatio-temporal array of dither patterns, said method comprising:
B	a. establishing a spatio-temporal array of dither pattern tiles comprising a plurality of temporal framesets, each of said framesets comprising a plurality of pattern tiles for each of a plurality of color channels; and	B	a. establishing a spatio-temporal array of dither pattern tiles comprising a plurality of temporal framesets, each of said framesets comprising a plurality of pattern tiles for each of a plurality of color channels; and

C	b. designating pixel values in said dither pattern tiles wherein subsequently-designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern tiles in other color channels.	C	b. designating pixel values in said dither pattern tiles wherein subsequently-designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern tiles in other color channels.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-22 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows:

Claims 1, 5 & 19 define a method for creating a dither pattern. The method comprises a. establishing an initial reference frameset (IRF), wherein said IRF comprises an initial pixel pattern; b. creating a dither pattern by orienting pixel values in said pattern by a method wherein pixel values are placed in a position that is dispersed from position of pixel values in said initial pixel pattern and the position of pixel values in said dither pattern.

Claims 14 & 20 define a method and claim 21 defines a system for creating a spatio-temporal array of dither pattern.

The invention of creating a dither pattern and an array does not transform to an article or physical object. Furthermore, a dither pattern and/or array is not a "machine", "composition of matter" or a "manufacture". A dither pattern and or an array is directed to nothing more than abstract idea or a mathematic equation, or natural phenomena and therefore are non-statutory. The claims do not provide a practical application that produce a useful, tangible and concrete result.

Claim 22 defines an " a set of instructions", which are merely claiming for a conceptual idea. The "a set of instructions" claims for (a). establishing a spatio-temporal array of dither pattern tiles comprising a plurality of temporal framesets, each of said framesets comprising a plurality of pattern tiles for each of a plurality of color channels; and (b). designating pixel values in said dither pattern tiles wherein subsequently-designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern tiles in other color channels. The recited instruction claim is with functional descriptive material. An "a set of instructions" per se does not fall within any of the four statutory classes of 35 U.S.C. §101. Furthermore, a "a set of instructions" is not a "machine", "composition of matter" or a "manufacture" because these statutory classes "relate to structural entities and can be grouped as 'product' claims in order to contrast them with process claims." (1 D. Chisum, Patents § 1.02 (1994)). Machines, manufactures and compositions of matter are embodied by physical structures or material, whereas an "a set of instruction" has neither a physical

structure nor a tangible material. That is, an "a set of instructions" is not a "machine" because it has no physical structure, and does not perform any useful, concrete and tangible result. Likewise, an "s set of instructions" is not a "composition of matter" because it is not "matter", but rather a form of conceptual idea. Finally, an "a set of instructions" is not a "manufacture" because all traditional definitions of a "manufacture" have required some form of physical structure, which a claimed "a set of instructions" does not have.

> A "manufacture" is defined as "the production of articles for use from raw materials or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." Diamond v. Chakrabarty, 447 U.S. 303, 308, 206 USPQ 193, 196-97 (1980) (quoting American Fruit Growers, Inc. v. Brogdex Co., 283 U.S. 1, 11, 8 USPQ 131, 133 (1931).

Therefore, a "a set of instructions" merely claims for an idea is considered non-statutory, and it is in the absence of any physical structure or tangible material, that does not fall within any of the four statutory classes of 35 U.S.C. §101.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martens et al (Martens) (US 5,983,251) in view of Spaulding et al (Spaulding) (US 6,091,849)

With regard to claim 1, Martens discloses a method and apparatus for data analysis, in that he teaches a method for creating a dither pattern, said method comprising: a. establishing an initial reference frameset (IRF) (Figures 4 & 5, col 14, lines 53-67 & col 15, lines 1-12), wherein said IRF comprises an initial pixel pattern (col 8, lines 58-67); b. creating a dither pattern by orienting pixel values in said pattern by a method wherein pixel values are placed in a position that is dispersed from position of pixel values in said initial pixel pattern and the position of pixel values in said dither pattern.

Martens differs from claim 1, in that he does not teach creating a dither pattern by orienting pixel values in said pattern by a method wherein pixel values are placed in a position that is dispersed from position of pixel values in said initial pixel pattern and the position of pixel values in said dither pattern.

Spaulding discloses a method for halftoning, in that he teaches creating {e.g. producing} a dither pattern by orienting pixel values in said pattern by a method wherein pixel values are placed in a position that is dispersed from position of pixel values in said initial pixel pattern and the position of pixel values in said dither pattern (Figure 8, col 12, lines 23-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Martens to include creating a dither pattern by

orienting pixel values in said pattern by a method wherein pixel values are placed in a position that is dispersed from position of pixel values in said initial pixel pattern and the position of pixel values in said dither pattern taught by Spaulding to optimizing conventional printer for printing halftone image (col 3, lines 34-40).

With regard to claim 2, Martens differs from claim 2, in that he does not teach said initial pixel pattern and said dither pattern are divided into multiple color channels.

Spaulding teaches said initial pixel pattern and said dither pattern are divided into multiple color channels (Figures 7-8 & 10-11, col 12, lines 23-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Martens to include said initial pixel pattern and said dither pattern are divided into multiple color channels taught by Spaulding to optimizing conventional printer for printing halftone image (col 3, lines 34-40).

With regard to claim 3, Martens differs from claim 3, in that he does not teaches said dispersion from pixel values in said initial pixel pattern is weighted differently from dispersion from said pixel values in said dither pattern.

Spaulding teaches said dispersion from pixel values in said initial pixel pattern is weighted differently from dispersion from said pixel values in said dither pattern (col 5, lines 50-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Martens to include said dispersion from pixel values in said initial pixel pattern is weighted differently from dispersion from said pixel

values in said dither pattern taught by Spaulding to optimizing conventional printer for printing halftone image (col 3, lines 34-40).

With regard to claim 4, Martens differs from claim 4, in that he does not teach said dispersion from pixel values in a first color channel is weighted differently from said dispersion from pixel values in another color channel.

Spaulding teaches said dispersion from pixel values in a first color channel is weighted differently from said dispersion from pixel values in another color channel (col 5, lines 50-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Martens to include said dispersion from pixel values in a first color channel is weighted differently from said dispersion from pixel values in another color channel taught by Spaulding to optimizing conventional printer for printing halftone image (col 3, lines 34-40).

With regard to claim 19, Martens teaches a method for creating a dither pattern, said method comprising: a. establishing an initial reference frameset (IRF) (Figures 4 & 5, col 14, lines 53-67 & col 15, lines 1-12), wherein said IRF comprises a dither pattern.

Martens differs from claim 19, in that he does not teach repeating steps of dither patterns and color channels.

Spaulding teaches b. designating, a first pixel value in a dither pattern (col 12, lines 23-53) for a first channel, wherein said first value is located at a position that is dispersed from the positions of pixel values in said pattern in said IRF (Figure 4, col 4, lines 13-36); c. designating a second pixel value in said dither pattern for a first channel,

wherein said second value is located at a position that is dispersed from the positions of pixel values in said dither pattern and in said IRF {e.g. for each color channel of the multi-channel digital color image, the matrix of dither values associated with the color channel using the location of a pixel} (Figure 11, col 14, lines 38-67 & col 15, lines 1-9); d. repeating said designating in step c until all pixel values in said dither pattern for said first channel are designated (col 14, lines 66-67 &col 16, line 4) ; e. designating, a first pixel value in a dither pattern for a second channel, wherein said first value is located at a position that is dispersed from the positions of pixel values in said dither pattern for said first channel and in said IRF (Figure 11, col 14, lines 38-67 & col 15, lines 1-9); f. designating a second pixel value in said dither pattern for a second channel, wherein said second value is located at a position that is dispersed from the positions of pixel values in said dither pattern for a second channel, pixel values in said dither pattern for a first channel and dither patterns in said IRF {e.g. for each color channel of the multi-channel digital color image, the matrix of dither values associated with the color channel using the location of a pixel} (Figure 11, col 14, lines 38-67 & col 15, lines 1-9); g. repeating said designating in step f until all pixel values in said dither pattern for said second channel are designated (col 15, lines 48-49); and h. repeating steps e through f for any other channels (col 14, lines 66-67 &col 16, line 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Martens to include said dispersion from pixel values in a first color channel is weighted differently from said dispersion from pixel

values in another color channel taught by Spaulding to optimizing conventional printer for printing halftone image (col 3, lines 34-40).

7. Claims 5-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spaulding et at (Spaulding) (US 6,091,849) in view of Delabastita et al (Delabastita) (US 5,766,807) further in view of Wu et al (Wu) (US 7,110,455).

With regard to claim 5, Spaulding discloses a method for halftoning, in that he teaches creating a method for creating {e.g. producing} (Figure 8, col 12, lines 23-53) a dither pattern for a multiple image description channel image, said method comprising: designating pixel values in a plurality of dither pattern tiles, each of said tiles being allocated to an image description channel, wherein said designating is performed using cross-channel feedback, such that subsequently-designated pixel values are placed at a location channels {e.g. corresponding dither pattern input level for light cyan color channel} that is related to the location {e.g. for each color channel of the multi-channel digital color image, the matrix of dither values associated with the color channel using the location of a pixel} (Figure 11, col 14, lines 38-67 & col 15, lines 1-9) of previously-designated pixel values in the same image description channel and related to the location of previously-designated pixel values in other image description (Figure 11, col 14, lines 38-67 & col 15, lines 1-9).

Spaulding differs form claim 5, in that he does not teach dither pattern tiles.

Delabastita discloses a halftone method, in that he teaches dither pattern tile {e.g. supercells or tiles and the halftone cells} (Figures 2 & 3, col 6, lines 64-67 & col 7, lines 1-7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Spaulding to include dither pattern tiles taught by Delabastita to improve the reproduction of the halftone screen (col 3, lines 14-16).

With regard to claim 6, Spaulding teaches said "related to the location" comprises dispersion from the location (Figures 6-9, col 7, lines 53-67 & col 8, lines 1-4).

With regard to claim 7, Spaulding differs from claim 7, in that he does not teach using an infinite impulse response function.

Wu discloses a noise reduction method, in that he teaches using an infinite impulse response function {e.g. a technique of using Infinite Impulse Response (IIR) temporal filtering} (Abstract, col 2, lines 34-67 & col 3, lines 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Spaulding to include using an infinite impulse response function taught by Wu to improve noise filtering technique (col 2, lines 20-26).

With regard to claim 8, Spaulding teaches said relation to the location of previously-designated pixels is channel specific such that pixel values in one color channel will disperse differently than pixel values in another channel {e.g. dispersing is specific for each yellow, light magenta, dark magenta color channel, e.g. for different density level} (Figures 10-11, col 14, lines 38-67 & col 15, lines 1-9).

With regard to claim 9, Spaulding teaches said relation to the location of previously-designated pixels is channel specific such that pixel values in color channels other than the channel of the pixel being designated will disperse differently than pixel values in the same channel ((Figure 11, col 14, lines 38-67 & col 15, lines 1-9).

With regard to claim 10, Spaulding teaches said image description channels are color channels ((Figure 11, col 14, lines 38-67 & col 15, lines 1-9).

With regard to claim 11, Spaulding teaches said image description channels comprise three channels for each of a red, green and blue color (col 13, lines 40-57).

With regard to claim 12, Spaulding teaches pixel values in said channels are designated in a sequence one channel at a time with cross-channel feedback being used to designate pixel locations after a first channel is designated (Figures 8-9 & 10-11, col 14, lines 38-67 & col 15, lines 1-9).

With regard to claim 13, Spaulding teaches pixel values in said channels are designated in parallel with cross-channel dispersion feedback for each channel {e.g. multi-channel processing} (Figures 8-9 & 10-11, col 14, lines 38-67 & col 15, lines 1-9).

8. Claims 14-18, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strolle et al (Strolle) (US 4,683,490) in view of Spaulding et at (Spaulding) (US 6,091,849) and further in view of Delabastita et al (Delabastita) (US 5,766,807).

With regard to claim 14, Strolle discloses a video signal processing apparatus, in that he teaches a method for creating a spatio-temporal array of dither patterns, said method comprising: a. establishing a spatio-temporal array (Figure 2, col 8, lines 29-49)

of dither pattern tiles comprising a plurality of temporal framesets {e.g. a series of frames} (col 3, lines 63-67 & col 4, lines 1-5), each of said framesets comprising a plurality of pattern tiles for each of a plurality of color channels (col 2, lines 23-32).

Strolle differs from claim 14, in that he does not explicitly teach (a) a plurality of pattern tiles for each of a plurality of color channels, and (b). designating pixel values in said dither pattern tiles wherein subsequently-designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern tiles in other color channels.

Spaulding teaches (a) a plurality of color channels for image pixel dithering (Figures 7-8 & 10-11, col 12, lines 23-38) and Delabastita teaches dither pattern tile {e.g. supercells or tiles and the halftone cells} (Figures 2 & 3, col 6, lines 64-67 & col 7, lines 1-7); and (b) Delabastita teaches designating pixel values in said dither pattern tiles wherein subsequently-designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern tiles (Figures 2 & 3, col 6, lines 64-67 & col 7, lines 1-7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Strolle to include a plurality of color channels for image pixel dithering taught by Spaulding to optimizing conventional printer for printing halftone image (col 3, lines 34-40, Spaulding), and designating pixel values in said dither pattern tiles wherein subsequently-designated pixel values are spatially dispersed from previously-designated pixel values in the same dither pattern tile and dither pattern

tiles taught by Delabastita to improve the reproduction of the halftone screen (col 3, lines 14-16, Delabastita).

With regard to claim 15, Strolle teaches temporal frames (col 3, lines 63-67 & col 4, lines 1-9).

Strolle differs from claim 15, in that he does not teach said subsequently-designated pixel values are also dispersed from previously-designated pixel values.

Spaulding teaches said subsequently-designated pixel values are also dispersed from previously-designated pixel values (Figures 10-11, col 14, lines 38-67 & col 15, lines 1-9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Strolle to include said subsequently-designated pixel values are also dispersed from previously-designated pixel values taught by Spaulding to optimizing conventional printer for printing halftone image (col 3, lines 34-40).

With regard to claim 16, Strolle differs from claim 16, in hath he does not teach said dispersion from pixel values in other temporal frames is weighted.

Spaulding teaches using weight factor for said dispersion pixel value (col 8, lines 15-34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Strolle to include said dispersion from pixel values in other temporal frames is weighted taught by Spaulding to optimizing conventional printer for printing halftone image (col 3, lines 34-40).

With regard to claim 17, Strolle differs form claim 17, in that he does not teach said dispersion from pixel values in other color channels is weighted wherein other color channels have a lower dispersion than the color channel in which a pixel value is designated.

Spaulding teaches said dispersion from pixel values in other color channels is weighted wherein other color channels have a lower dispersion than the color channel in which a pixel value is designated (col 5, lines 50-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Strolle to include said dispersion from pixel values in other color channels is weighted wherein other color channels have a lower dispersion than the color channel in which a pixel value is designated taught by Spaulding to optimizing conventional printer for printing halftone image (col 3, lines 34-40).

With regard to claim 18, Strolle teaches pixel values designated in a last temporal frame are considered temporally adjacent to a first-designated frame wherein said pixel values in said first-designated frame have a dispersion effect on pixels designated in said last frame {e.g. temporal cycles} (col 4, lines 62-67 & col 5, lines 1-11).

With regard to claim 20, the structure elements of method claim 14 perform all steps of method claim 20. Thus claim 20 is rejected under 103(a) for the same reason discussed in the rejection of claim 14.

With regard to claim 21, the structure elements of method claim 14 perform all steps of method claim 21. Thus claim 21 is rejected under 103(a) for the same reason discussed in the rejection of claim 14.

Correspondence Information

9. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement is traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is (571) 270-1120. The examiner can normally be reached on Monday to Friday, from 8:30 AM – 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler Lamb can be reached on (571) 272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Kau
Patent Examiner
Division: 2625
April 23, 2007

TWYLER LAMB
SUPERVISORY PATENT EXAMINER